

SUPERFUND RESPONSE ACTION PRIORITY PANEL REVIEW FORM

Date Form Completed: October 17, 2014

General Site Information

Region:	Region 1	City:	Brooksville	State:	Maine
CERCLIS EPA ID:	MED980524128		CERCLIS Site Name:	Callahan Mine Superfund Site	
NPL Status: (P/F/D)	F		Year Listed to NPL:	2002	

Brief Site Description: *(Site Type, Current and Future Land Use, General Site Contaminant and Media Info, Site Area and Location information.)*

The Callahan Mine is a former mine complex which included an open pit mine located in an estuary and the associated ore storage and processing facilities along with tailings and waste rock disposal facilities. The Site operated from 1968 to 1972. Zinc, copper, and lead were the major components of the ore with cadmium and arsenic also present. The current land use is open land that is used for limited recreational and exploring activities. The Site is in an area with both year round and seasonal homes and is adjacent to the Holbrook Island Sanctuary State Park. The major contaminants at the time of the OU1 ROD were PCBs, lead, arsenic, copper, zinc. The PCB contamination has been controlled as a result of the OU1 cleanup which was completed in 2013.

General Project Information

Type of Action:	Remedial	Site Charging SSID:	0101028
Operable Unit:	OU3 Phase 1	CERCLIS Action RAT Code:	RA

Is this the final action for the site that will result in a site construction completion? ☐ Yes ☒ No

Will implementation of this action result in the Environmental Indicator for Human Exposure being brought under control? ☒ Yes ☐ No

Response Action Summary

Describe briefly site activities conducted in the past or currently underway:

The Callahan Mine operated from 1968 to 1972. EPA began the RI/FS in 2004 as a fund lead RI/FS. The State of Maine took over the RI/FS in 2005 as a PRP lead RI/FS pursuant to an administrative order. In 2009, the RI/FS for OU1 was completed. The RI/FS for OU2 (groundwater) will continue as a PRP RI/FS until that investigation program is complete. In September 2009, EPA signed a Record of Decision for OU1 (which has been subsequently split into OU1 and OU3). OU1 targeted the current threats to human health and the environment from a PCB hot spot and lead and arsenic in residential yards. The OU1 cleanup was completed in September 2013. An ESD for the 2009 ROD was signed in 2013. OU3 will be implemented in two phases. OU3 Phase 1: Closure of the tailings impoundment and stabilization of the tailing dam. OU3 Phase 2 would include the waste rock and sediment excavation and consolidation into the CAD cell.

Specifically identify the discrete activities and site areas to be considered by this panel evaluation:

The Region is proposing to close the tailings impoundment by diverting surface water, reducing the height of the tailings dam, grading the face, and placing a geomembrane-based cover system over the 17 acre tailing impoundment. Prior to the start of OU3, the Region will install a horizontal drain system to lower the water table within the tailings impoundment. This work is estimated to cost \$750K and will be funded as an ongoing RA project in FY15. This drain system needs to operate for at least 1 year before the bulk of the OU3 cleanup can occur.

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Briefly describe additional work remaining at the site for construction completion after completion of discrete activities being ranked:

The remaining work at the Site would include the OU3 Phase 3 cleanup action (sediment and waste rock consolidation into CAD cell) and the completion of the OU2 RI/FS, which will address site-wide groundwater.

Exemption 5 - DP

Response Action Cost

Total Cost of Proposed Response Action:

(\$ amount should represent total funding need for new RA funding from national allowance above and beyond those funds anticipated to be utilized through special accounts or State Superfund Contracts.)

\$15 million.

Source of Proposed Response Action Cost Amount:

(ROD, 30%, 60%, 90% RD, Contract Bid, USACE estimate, etc...)

30% Remedial Design.

Breakout of Total Action Cost Planned Annual Need by Fiscal Year:

(If the estimated cost of the response action exceeds \$10 million, please provide multiple funding scenarios for fiscal year needs; general planned annual need scenario, maximum funding scenario, and minimum funding scenario.)

FY 2016 - \$7.5 million

FY2017 - \$7.5 million

Other information or assumptions associated with cost estimates?

The assumption is based on the 30% RD. The initial estimate at the time of the 30% design was \$10 million, which has been revised to \$15 to take into account several design changes that will be included in the draft final design, including: a buttress of the tailings dam; further dewatering measures to address pore pressure in the tailings slimes during the loading of the cover system; and the additional excavation to achieve a 1.5 factor of safety criteria for the tailings dam.

Readiness Criteria

1. Date State Superfund Contract or State Cooperative Agreement will be signed (Month)?

The State Superfund Contract was signed in August 2010.

2. If Non-Time Critical, is State cost sharing (provide details)?

N/A.

3. If Remedial Action, when will Remedial Design be 95% complete?

The final Remedial Design will be submitted to EPA in December 2014.

4. When will Region be able to obligate money to the site?

The Region will issue a contract action once the funding is received.

5. Estimate when on-site construction activities will begin:

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The horizontal drain installation, previously approved, would occur in 2015. Construction activities for the dam stabilization and tailings impoundment would be in 2016 and 2017.

6. Has CERCLIS been updated to consistently reflect project cost/readiness information?

Yes.

Site/Project Name: Callahan Mine OU3 Phase 1

Criteria #1 - RISKS TO HUMAN POPULATION EXPOSED (Weight Factor = 5)

Describe the exposure scenario(s) driving the risk and remedy. Include risk and exposure information on current/future use, on-site/off-site, media, exposure route, and receptors:

The levels of arsenic and lead are above the site specific cleanup goals for recreational/trespass exposure. The ROD estimated the current recreation risk to be within the acceptable risk for carcinogenic and non-carcinogenic contaminants of concern. The future adjacent resident cancer risk is also within the risk range. The future adjacent residential exposure HI for arsenic was 2.2. The level of lead was also determined to be a concern under only future adjacent residential exposure scenario based on the use of the IEUBK model. The current exposure is predominantly the ATV type trespasser who often get stuck in the tailings. The future exposure assumed residential use of the adjacent undeveloped land which could result in residential-like exposure to the tailings if no action is taken. The closest resident is current about 800 feet from the tailings impoundment. The groundwater within the tailings impoundment is unsuitable for use as a water supply based on a comparison with federal and state groundwater standards. The human health risk assessment for groundwater will be completed as part of OU2. There is no current use of the groundwater at the tailings impoundment.

Estimate the number of people reasonably anticipated to be exposed in the absence of any future EPA action for each medium for the following time frames:

MEDIUM	<2yrs	<10yrs	>10yrs
Soil/tailing	10	50	>50
Groundwater	0	0	0

Discuss the likelihood that the above exposures will occur:

There is periodic use of the tailings impoundment by ATV riders and site trespassers. Assume about 5 people use the site for periodic trespass ATV use each year. Future development of adjacent properties is possible. The adjacent area is undeveloped.

Other Risk/Exposure Information?

The clams in the estuary contain up to 50 ppm lead. There is a shellfish ban in the area so it was not considered a current exposure pathway. The biota tissue ingestion exposure will be addressed as part of the OU2 ROD.

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Criteria #2 – SITE/CONTAMINANT STABILITY (Weight Factor = 5)

Describe the means/likelihood that contamination could impact other areas/media given current containment:

The tailings dam does not meet acceptable criteria for long-term stability. If the tailings dam were to fail, a significant quantity of tailings would flow into the Goose Pond estuary and block the tidal flow.

Are the contaminants contained in engineered structure(s) that currently prevents migration of contaminants? Is this structure sound and likely to maintain its integrity?

The tailings are partially contained. There are seeps that discharge to Goose Pond and surface erosion. The tailings dam does not meet acceptable criteria for long-term stability.

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Are the contaminants in a physical form that limits the potential to migrate from the site? Is this physical condition reversible or permanent?

The contaminants migrate in seeps by dissolved and suspended transport. A large quantity of tailings could migrate if the tailings dam were to fail.

Are there institutional physical controls that currently prevent exposure to contamination? How reliable is it estimated to be?

ICs will be a necessary component of the cleanup but would not prevent ecological exposure.

Other information on site/contaminant stability?

Site/Project Name: Callahan Mine OU3 Phase 1

Criteria #3 – CONTAMINANT CHARACTERISTICS (Weight Factor = 3)

(Concentration, toxicity, and volume or area contaminated above health based levels)

List Principle Contaminants (Please provide average and high concentrations.):

(Provide upper end concentration (e.g. 95% upper confidence level for the mean, as is used in a risk assessment, or maximum value [assuming it is not a true outlier], along with a measure of how values are distributed {e.g. standard deviation} or a central tendency values [e.g., average].)

<u>Contaminant</u>	<u>*Media</u>	<u>**Concentrations</u>		
		Maximum value (mg/kg)	Average (mg/kg)	95%UCL (mg/kg)
Arsenic	Soil	220	52	91
Cadmium	Soil	56	26	
Copper	soil	4,000	2,764	
Lead	Soil	2,300	826	1,010
Zinc	Soil	22,000	7,355	
Zinc	Sw-seep	10,600		
Copper	Sw-seep	40		
Cadmium	Sw-seep	51		
Manganese	Groundwater	7,500		

*(*Media: AR – Air, SL – Soil, ST – Sediment, GW – Groundwater, SW – Surface Water)*

*(**Concentrations: Provide concentration measure used in the risk assessment and Record of Decision as the basis for the remedy.)*

Describe the characteristics of the contaminant with regards to its inherent toxicity and the significance of the concentrations and amount of the contaminant to site risk. *(Please include the clean up level of the contaminants discussed.)*

The cadmium, copper, lead, and zinc are being transported in suspended and dissolved form into the Goose Pond estuary. The concentrations found in sediment and pore water are toxic to aquatic life. Elevated levels of these contaminants are being detected in clams, fish, crabs, and other marine organisms. For Human Health, the residential cleanup levels for arsenic is 14 mg/kg and for lead is 375 mg/kg. The recreational cleanup level for arsenic is 30 mg/kg and for lead is 700 mg/kg.

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Describe any additional information on contaminant concentrations which could provide a better context for the distribution, amount, and/or extent of site contamination. *(e.g. frequency of detection/outlier concentrations, exposure point concentrations, maximum or average concentration values, etc.....)*

The arsenic, cobalt, copper, lead, and zinc are all components of the ore and waste rock. As a result, these constituents are found wherever the waste rock has decomposed to form soil or sediment or in surface water and groundwater that comes into contact with the waste.

Other information on contaminant characteristics?

Site/Project Name: Callahan Mine OU3 Phase 1

Criteria #4 – THREAT TO SIGNIFICANT ENVIRONMENT (Weight Factor = 3)

(Endangered species or their critical habitats, sensitive environmental areas.)

Describe any observed or predicted adverse impacts on ecological receptors including their ecological significance, the likelihood of impacts occurring, and the estimated size of impacted area:

The seepage and eroded tailings from the tailings impoundment enters Goose Pond. The area of Goose Pond adjacent to the Tailings Impoundment and Waste Rock Pile #3 contains sediment with concentrations that are toxic to aquatic organisms. Studies by EPA, Dartmouth College, and the USGS show movement of the contamination up the food chain and potentially into Penobscot Bay, an extremely high quality ecological habitat. The Tailings Impoundment is one of the sources of contamination impacting Goose Pond.

Would natural recovery occur if no action was taken? ☐ Yes ☒ No
If yes, estimate how long this would take.

Inaction would allow both the instability of the Tailings Impoundment dam and the flux of contaminated surface water and sediment in the Goose Pond salt marsh and estuary to continue. There is no basis to believe that natural recovery would occur and it is likely that the dam stability would degrade over time.

Other information on threat to significant environment?

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Criteria #5 – PROGRAMMATIC CONSIDERATIONS (Weight Factor = 4)

(Innovative technologies, state/community acceptance, environmental justice, redevelopment, construction completion, economic redevelopment.)

Describe the degree to which the community accepts the response action.

The community is supportive of the response action at the Site. There is significant concern regarding truck traffic and associated road impacts.

Describe the degree to which the State accepts the response action.

The State of Maine concurred on the response action and is supportive of the remedy.

Describe other programmatic considerations, e.g.; natural resource damage claim pending, Brownfields site, use of innovative technology, construction completion, economic redevelopment, environmental justice, etc...

The only programmatic consideration is the need to avoid a tailings dam failure that could release additional contamination into Penobscot Bay and greatly increase the cost of the remedial action.